REPORT ON THE PLANS FOR THE PROPOSED INSTALLATION OF ADDITIONAL WASTEWATER TREATMENT FACILITIES AT THE UNION CARBIDE CORPORATION, WELDING MATERIALS PLANT, IN ASHTABULA

General

Detail plans and a completed Permit to Install application were received on April 9, 1976, from Mr. E. J. Phillips, Manager of Process Engineering for the Union Carbide Corporation, Welding Materials Plant, in Ashtabula. A Permit to Install is required for this installation since construction is required by the Ferroalloy Plant's NPDES Permit, but not specifically for the Welding Materials Plant's new process wastewater contribution to the existing effluent. A block diagram of the proposed treatment system has been submitted for review as a part of the Permit to Install application.

Present Facilities

The Welding Materials Plant manufactures steel welding rod using cold drawing. Raw materials include raw steel rod, cleaning and drawing agents such as sulfuric acid and hydrochloric acid, borax, soaps (stearates), and oils. Steel rod (received in coil form) is cleaned and degreased in an alkaline soap solution and is rinsed in a series of batch tanks. As required, they may be given a light copper plate or a coating of potassium permanganate. The rod is then sent through a series of drawing machines for

size reduction. Each of the machines uses either dry drawing lubricants or wet lubricants such as stearates or oils.

The wastewaters discharged from the Welding Materials Plant consist of acid coil rinses, lubricant overflows, drawing machine cooling water, and sanitary wastewater (see attached flow diagram for details). The cooling water is directed to the 003 outfall as indicated in the diagram. The acidic process waters combine with lime-laden scrubber water from the Ferroalloy Plant in Lagoon No. 2 for neutralization. Overflow from this lagoon enters two more lagoons before mixing with other waste streams for discharge through 001 outfall (see diagram).

Sanitary wastes from the Welding Materials Plant are sent to a lift station, which pumps the wastes to the sewage treatment plant owned and operated by the Ferroalloy Plant. The treatment facilities include settling basins, Imhoff tanks, and a trickling filter.

Proposed Facilities

The Welding Materials Plant proposes to install a new process for copper plating rod that is designed to mechanically descale rod, followed by pickling in hydrochloric acid, copper plating in sodium cyanide solution, rinsing and, finally, a soaping operation using a borax-based solution.

Cyanide wastes from the plating system will be treated by the oxidation method to reduce the active cyanide level. This method involves the treatment of cyanide waste with caustic soda and excess chlorine to convert cyanide first to cyanate and, subsequently, to the decomposition products CO_2, N_2, NaCl, and water. Control equipment consists of pH monitoring

devices and chlorine (ORP) monitoring equipment. This system is designed to produce an effluent that meets Federal EPA "BPT" guidelines for this specific segment of the plating industry.

The treated plating wastes are anticipated to contain significant amounts of copper oxide and hydroxide precipitates following the cyanide treatment. It has been proposed that removal of these substances be accomplished by directing the flow to the Ferroalloy Plant's clarification system for the necessary precipitation.

The hydrochloric acid wastewater will be pumped to the existing system (Pond No. 2) and will be combined with the lime wastewater from the Ferroalloy Plant. It is anticipated that adequate neutralization will take place to insure an acceptable pH of the final effluent.

The proposed facilities have been found to qualify for consideration for tax certification.

Estimated Cost

It is estimated that the cost of the proposed facilities will be approximately $100,000.00.

Recommendation

It is recommended that these plans be approved subject to the usual conditions.

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WS/fmk
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